

1 Geoffrey Kors
2 Assistant Regional Counsel
3 Region 9
4 United States Environmental Protection Agency
5 215 Fremont Street
6 San Francisco, California 94105
7 (415) 974-9073

8 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
9 REGION 9

10 In the matter of:)

11 APACHE POWDER COMPANY)
12 St. David, Arizona)

13 RESPONDENT)

14 Proceeding under the Comprehensive)
15 Environmental Response, Comp-)
16 ensation, and Liability Act of 1980)
17 as amended by the Superfund)
18 Amendments and Reauthorization)
19 Act of 1986.)

U.S. E.P.A.
Docket Number
90-04

20 ADMINISTRATIVE ORDER

TABLE OF CONTENTS

I.	Jurisdiction.	3
II.	Statement of Purpose	3
III.	Findings of Fact	4
IV.	Conclusions of Law	10
V.	Determinations	11
VI.	Work to be Performed	11
VII.	Designated Project Coordinators	34
VIII.	Site Access	35
IX.	Sampling, Access, and Data Availability	36
X.	Record Preservation	38
XI.	Other Claims	38
XII.	Other Applicable Laws	38
XIII.	Government Not Liable	39
XIV.	Community Relations/Public Comment	39
XV.	Parties Bound	39
XVI.	Endangerment During Implementation	40
XVII.	Noncompliance	40
XVIII.	Opportunity to Confer	41
XIX.	Notice of Intent to Comply	41
XX.	Notice to the State	41
XXI.	Severability	41
XXII.	Termination and Satisfaction	42
XXIII.	Effective Date and Subsequent Modification	42

1 I. JURISDICTION

2 This Order is issued pursuant to the authority vested in the
3 President of the United States by the Comprehensive Environmental
4 Response, Compensation, and Liability Act of 1980 (as amended by
5 the Superfund Amendments and Reauthorization Act of 1986)
6 ("CERCLA"), 42 U.S.C. §§ 9601, et seq.. The President delegated
7 this authority to the Administrator of the United States Environ-
8 mental Protection Agency ("EPA" or "Agency") by Executive Orders
9 12316, 46 Fed. Reg. 42237, and 12580, 52 Fed. Reg. 2923. This
10 authority has been further delegated to the Assistant Ad-
11 ministrator for Solid Waste and Emergency Response and the
12 Regional Administrators. This authority has been redelegated to
13 the Director, Hazardous Waste Management Division, EPA, Region 9.

14 II. STATEMENT OF PURPOSE

15 This Order requires Respondent Apache Powder Company
16 ("Apache" or "Respondent") to perform the following tasks:

17 A. To conduct the Remedial Investigation ("RI") described
18 in the Remedial Investigation and Feasibility Study Work Plan
19 ("RI/FS Work Plan"), a copy of which is attached as Attachment A
20 and by this reference made a part of this Order, in order to
21 determine fully the nature and extent of contamination and the
22 potential for harm to the public health or welfare or the en-
23 vironment caused by the release or threatened release of hazard-
24 ous substances, pollutants, or contaminants at or from the Apache
25 facility (the "Site"), as defined in Section III(A) below. The
26 RI/FS Work Plan specifies work to be performed during the RI, in-
27 cluding, among other things, exploratory borehole drilling,

1 monitoring well placement, aquifer testing, groundwater sampling,
2 surface impoundment sampling, surface water sampling, soil boring
3 drilling and sampling, and treatability study testing. It also
4 includes a list of reports, documents, and other deliverables
5 that Apache will provide for EPA review, comment and approval;

6 B. To conduct the Feasibility Study ("FS") described in the
7 RI/FS Work Plan which shall evaluate remedial action alternatives
8 to prevent and eliminate the release or threatened release of
9 hazardous substances, pollutants, or contaminants at or from the
10 Site;

11 C. To provide a long-term alternate domestic water supply,
12 including drinking water, for those residents with domestic wells
13 that are contaminated with Hazardous Substances, Pollutants or
14 Contaminants at levels exceeding either Maximum Contaminant
15 Levels (MCL's) established pursuant to the Safe Drinking Water
16 Act or State Action Levels; and

17 D. To undertake all actions required by the terms and con-
18 ditions of this Order in accordance with CERCLA and the National
19 Contingency Plan (NCP), 40 C.F.R. Part 300, et seq., as amended.

20 III. FINDINGS OF FACT

21 A. Apache owns and operates an explosives and fertilizer
22 manufacturing plant located about one mile southwest of the town
23 of St. David, Arizona, in Cochise County. The Apache Site is lo-
24 cated in portions of Sections 6, 7, and 8 of Township 18 South,
25 Range 21 East, and portions of Section 12 of Township 18 South,
26 Range 21 East, of the Gila and Salt River Base and Meridian. The
27 total Site area is approximately 945 acres.

1 B. Apache acquired the land comprising the Site in 18 con-
2 veyances which took place between 1921 and 1986.

3 C. On June 10, 1986, the Site was proposed for inclusion on
4 the Environmental Protection Agency's National Priorities
5 List (NPL) as defined in Section 105 of CERCLA (42 U.S.C. § 9605).

6 D. On April 11, 1988, EPA sent Apache a "Special Notice
7 Letter," pursuant to Section 122(e) of CERCLA (42 U.S.C. §
8 9622(e)), providing Apache the opportunity to submit a good faith
9 proposal to conduct and finance the RI/FS. Apache refused to sub-
10 mit such a proposal. EPA provided Apache numerous additional op-
11 portunities to conduct the RI/FS on a consensual basis. Apache
12 has rejected each of these opportunities.

13 E. Apache has been in operation at the Site from 1922 to the
14 present. Historically, operations at the Site have included the
15 manufacture of ammonia, sulfuric acid, nitroglycerin-based ex-
16 plosives, and water-gel high explosives. Apache currently engages
17 in three primary industrial operations, including the production
18 of nitric acid, ammonium nitrate, and Carbamate blasting agent.
19 Some of the nitric acid produced at the Site is sold commercially
20 by Apache, although most is diverted to the plant neutralization
21 facility to produce ammonium nitrate liquor. Ammonium nitrate is
22 processed in a prill and graining plant, and either sold as fer-
23 tilizer, or blended with diesel fuel and packaged as a blasting
24 agent. Apache also produces detonating cord and safety fuses and
25 operates a plant powerhouse.

26 F. Apache generates solid waste which is disposed of at the
27 Site. These solid wastes, as defined by their physical consis-
28

1 tency, include explosive materials, which are burned on pads in
2 the on-site burn area, as well as other wastes, which are disposed
3 in an on-site landfill. Ash residue from the burn area is stored
4 in an ash pile adjacent to the burn area.

5 G. Apache also generates liquid industrial waste. Histori-
6 cally, liquid waste generated by Apache has included condensate
7 from nitric acid neutralization (1979-1989), process blowdown from
8 the ammonia plant (1958-1979), washdown water from the prill plant
9 (1963-at least 1986), nitration and nitroglycerin handling contact
10 waters (1922-1983), as well as non-contact cooling waters from the
11 sulfuric acid plant (1946-1965), the acid mixing operations
12 (1922-1983), the ammonium nitrate crystallization (1922-1983), and
13 the ammonia plant (1958-1979). Liquid waste currently generated
14 includes fuse production wastewaters, cooling tower blowdown,
15 process contact water, equipment washdown, and water softening
16 plant wastewater, as well as non-contact cooling water from the
17 nitric acid oxidation process and from the fuse production area.

18 H. From 1922 to 1971, liquid industrial wastes generated at
19 the Site were discharged to washes which drain the Site and are
20 tributary to the San Pedro River, which is adjacent to the Site.
21 Since 1971, wastewaters have primarily been contained in on-site
22 unlined surface impoundments. There are 16 surface impoundments
23 on-site, at least four of which are currently in use (ponds 1A,
24 2A, 3A, and 3B) to contain discharged wastewaters. Other on-site
25 waste management units include the burn area, ash area, landfill,
26 and drum storage area.

27 I. Since 1980, soil, sludge, and water samples have been
28

1 collected at and in the vicinity of the Site.

2 1. In July 1980, EPA collected liquid samples from Pond
3 2A, which indicated the presence of nitrates and heavy metals on
4 Site at the following concentrations: 50 mg/l nitrate-nitrogen,
5 30 mg/l arsenic, 20 mg/l cadmium, 8 mg/l chromium, 60 mg/l lead,
6 and 1.9 mg/l zinc.

7 2. In July 1982, representatives from the Southeastern
8 Arizona Governments Organization (SEAGO) and the Arizona Depart-
9 ment of Health Services (ADHS) collected soil and water samples at
10 the Site. In Pond 7 water, 13,490 mg/l nitrate-nitrogen was
11 detected. In Pond 1A soils, 9,780 mg/kg nitrate-nitrogen was
12 detected. In the burn area, 19,560 mg/kg nitrate-nitrogen was
13 detected.

14 3. In March, June, July, and December 1984, SEAGO sampled
15 off-site water supply wells. A sample collected from a domestic
16 well owned by the Carnes family ("Carnes well") exhibited a
17 nitrate-nitrogen level of 470 mg/l. Other off-site wells ex-
18 hibited nitrate-nitrogen levels of up to 39 mg/l.

19 4. In 1985, Apache sampled the water in several on-site
20 ponds, and analyses of these samples indicated 4,450 mg/l
21 nitrate-nitrogen in the Dynagel pond, 5,650 mg/l nitrate-nitrogen
22 in Pond 7, and 8,990 mg/l nitrate-nitrogen in Pond 6B.

23 5. In November 1985, the Arizona Department of Health
24 Services (ADHS) conducted an inspection of the Site pursuant to
25 the Resource Conservation and Recovery Act (RCRA). Analytical
26 results of a composite sample collected from the ash area indi-
27 cated an EP Toxicity lead concentration of 7.9 mg/l in the extract
28

1 obtained from the sample.

2 6. Since July 1986, the Arizona Department of Environmen-
3 tal Quality (ADEQ), formerly ADHS, has collected surface water
4 samples from the San Pedro River upstream, downstream, and ad-
5 jacent to the Site. Samples collected from December 1986 through
6 May 1987 from a sampling location located 0.5 miles south of the
7 Highway 80 bridge, which is downstream from the Site, indicated
8 the following nitrate-nitrogen concentrations: December 1986--720
9 mg/l, January 1987--591 mg/l, February 1987--556 mg/l, March
10 1987--516 mg/l, April 1987--736 mg/l, May 1987--589 mg/l. Samples
11 collected during those times from a sampling point located 1.2
12 miles south of the Highway 80 bridge and adjacent to the Site in-
13 dicated an average nitrate-nitrogen concentration of 2.81 mg/l.

14 7. In December 1986, ADHS collected groundwater samples
15 from off-site wells near the Site. In the Carnes well, a
16 nitrate-nitrogen concentration of 335 mg/l was detected.

17 8. From August 1987 to November 1987, EPA conducted a
18 Preliminary Investigation (PI) at and in the vicinity of the Site.
19 On-site, nitrate-nitrogen was detected at concentrations of up to
20 3420 mg/kg in soils, up to 3465 mg/kg in pond sludge, and up to
21 471 mg/l in pond water. Chromium was detected at up to 400 mg/kg
22 in soils and up to 810 mg/kg in pond sludge. Lead was detected at
23 concentrations of up to 1340 mg/kg in soils, 150 mg/kg in pond
24 sludge, and 53 mg/l in pond water. Zinc was detected at con-
25 centrations of up to 16,000 mg/kg in soils, 41,600 mg/kg in pond
26 sludge, and 610 mg/l in pond water. In off-site groundwater,
27 nitrate-nitrogen was detected at levels up to 360 mg/l in the
28

1 Carnes well. A groundwater sample collected upgradient of the
2 Site exhibited 0.82 mg/l of nitrate-nitrogen. In off-site surface
3 water samples collected from San Pedro River locations downstream
4 from Apache, nitrate-nitrogen was detected at levels up to 1099
5 mg/l nitrate-nitrogen. In comparison, the surface water samples
6 collected in the San Pedro River upstream from Apache exhibited
7 nitrate-nitrogen concentrations of only 0.08 mg/l and 0.14 mg/l.

8 9. In June, 1987, the Agency for Toxic Substances and Dis-
9 ease Registry determined that potable water from private wells in
10 the area was contaminated with nitrates and that it represented an
11 imminent and substantial health concern, especially to infants.

12 j. The health effects of arsenic, cadmium, chromium, lead,
13 nitrate, and zinc are described below:

14 1. Arsenic poisoning may result in irritation of the
15 stomach and intestines, including nausea, vomiting, and diarrhea.
16 Liver damage and skin abnormalities may also occur as a result of
17 exposure to Arsenic;

18 2. Ingestion of cadmium results in a gastrointestinal type
19 of poisoning, as well as nausea, vomiting, diarrhea, and abdominal
20 pain. Inhalation of dust containing cadmium may cause dryness of
21 the throat, coughs, headaches, and vomiting;

22 3. Exposure to chromium compounds may result in irritation
23 to the skin and respiratory passages and may lead to ulceration.
24 Ingestion may lead to severe irritation of the gastrointestinal
25 tract, circulatory shock, and renal damage;

26 4. Inhalation and ingestion of lead may cause anemia;
27 Lead poisoning may also result in diarrhea, nausea, vomiting,
28

1 weakness, headache, and dizziness, and may result in permanent
2 brain damage;

3 5. The toxicity of nitrate in humans is due to the reduc-
4 tion of nitrate to nitrite by bacteria. Methemoglobinemia occurs
5 when nitrite reacts with hemoglobin to form methoglobin, which
6 will not transport oxygen to the tissues, and can thus lead to as-
7 phyxia. Infants, small children, and pregnant women are most sus-
8 ceptible to methemoglobinemia; and

9 6. Inhalation of zinc fumes may result in weakness,
10 chills, fever, nausea, and vomiting.

11 IV. CONCLUSIONS OF LAW

12 A. The Site is a "facility" as defined in Section 101(9) of
13 CERCLA, 42 U.S.C. § 9601(9).

14 B. Apache is a "person" as defined in Section 101(21) of
15 CERCLA, 42 U.S.C. § 9601(21).

16 C. The chemicals and their constituents at the Site are
17 "hazardous substances," "pollutants," or "contaminants," as
18 defined in Sections 101(14) and (33) of CERCLA, 42 U.S.C.
19 §§ 9601(14) and (33).

20 D. The past, present, and potential migration of con-
21 taminants from the Site constitutes an actual or threatened
22 "release" as defined in Section 101(22) of CERCLA, 42 U.S.C.
23 § 9601(22).

24 E. Apache is a "responsible party" pursuant to Section
25 107(a) of CERCLA, 42 U.S.C. § 9607(a).

26 V. DETERMINATIONS

27 Based on the Findings of Fact and Conclusions of Law set out
28

1 above, the Director, Hazardous Waste Management Division, EPA
2 Region 9, has determined that :

3 A. The release or threatened release of hazardous substances
4 from the Site may present an imminent and substantial endangerment
5 to the public health or welfare or the environment.

6 B. In order to properly ascertain the nature and extent of
7 the endangerment posed by the release or threatened release, and
8 to select a remedy which mitigates the release or threatened
9 release, a remedial investigation and feasibility study must be
10 completed for the Site.

11 C. The actions required by this Order are reasonable and
12 necessary to protect the public health, welfare and the environ-
13 ment, and, if properly performed, are consistent with the National
14 Contingency Plan, 40 C.F.R. Part 300.

15 VI. WORK TO BE PERFORMED

16 A. General Provisions

17 1. All response work performed pursuant to this Order shall
18 be under the direction and supervision of a qualified professional
19 engineer or a certified geologist with expertise in hazardous
20 waste site investigation. Prior to initiation of Site work,
21 Apache shall notify EPA in writing of the name, title, and
22 qualifications of such engineer or geologist and of any contrac-
23 tors and/or subcontractors to be used in carrying out the terms of
24 this Order. The qualifications of the persons undertaking the
25 work for Apache shall be subject to EPA's review, for verification
26 that such persons meet the minimum technical background and ex-
27 perience required for the work to be performed under this Order.

1 If EPA disapproves in writing of the technical qualifications of
2 any person(s), Apache shall notify EPA within 7 days of the writ-
3 ten notice of the identity and qualifications of the
4 replacement(s). If EPA subsequently disapproves of the
5 replacement(s), Apache shall submit to EPA a list containing the
6 names and qualifications of at least three (3) proposed
7 replacement(s) within 7 days of written notice of EPA's disap-
8 proval. EPA may then select the replacement(s) from this list or
9 may, as is provided for in CERCLA and the NCP, conduct a complete
10 RI/FS and seek reimbursement for costs from Apache.

11 2. Apache shall perform the tasks and submit reports con-
12 tained in the RI/FS Work Plan (Attachment A).

13 3. All such work shall be conducted in accordance with At-
14 tachment A, CERCLA, the NCP and current EPA Guidance, as amended.

15 4. EPA will perform the Risk Assessment portion of the FS
16 pursuant to EPA Guidance.

17 5. Deliverables to be submitted by Apache are listed below.
18 This list includes the type of review that EPA will conduct
19 (either "Review and Comment" or "Review and Approve"). The
20 Arizona Department of Environmental Quality (ADEQ) and the Arizona
21 Department of Water Resources (ADWR) will have the opportunity to
22 provide comments to EPA on deliverables. Each deliverable should
23 include the items described in the RI/FS Work Plan. These
24 specifics are meant as a framework for each deliverable's content.
25 All draft deliverables must contain information sufficient to al-
26 low for EPA's detailed technical review and comment. Open discus-
27 sions between Apache and EPA will be necessary to assure that
28

1 deliverables contain sufficient detail. Failure to submit what
2 EPA determines to be substantially sufficient information will be
3 deemed a failure to submit that draft deliverable.

4 6. Any reports, plans, specifications, schedules, and at-
5 tachments required by this Order are, upon approval by EPA, incor-
6 porated into this Order.

7 7. For the purposes of this Order, "day" means calendar day
8 unless otherwise specified in this Order.

9 B. Deliverable

10 During the course of the RI/FS, Apache shall submit the following
11 deliverables to EPA as set out in the RI/FS Work Plan schedule in
12 Section VI.C of this Order. The task and subtask numbers of the
13 deliverables refer to the task and subtask numbers of the RI/FS
14 workplan.

15 1. Source Control Plan

16 Draft: EPA Review and Comment

17 Final: EPA Review and Approve

18 Apache shall prepare and submit a Source Control Plan for
19 EPA's approval. The Source Control Plan shall include, at a mini-
20 mum, the following elements:

21 a. A proposal for diverting all currently generated
22 wastewater to impermeable holding areas or to a wastewater treat-
23 ment facility;

24 b. A proposal for the containment, removal, and/or
25 treatment of contaminated water and sludge in the ponds currently
26 in use;

27 c. An identification of the treatment levels to be
28

1 achieved;

2 d. A proposal for temporary grading, capping, diversion,
3 or other surface controls for Pond 7 and the Dynagel Pond, in or-
4 der to prevent surface water from collecting in or transporting
5 contaminants off these areas; and

6 e. A proposal for containment, removal, and/or treatment
7 of the ash pile in order to prevent future contamination, run-
8 off, or infiltration from the ash pile.

9
10 **2. Alternate Domestic Water Plan**

11 Draft: EPA Review and Comment

12 Final: EPA Review and Approve

13 Apache shall prepare and submit an Alternate Domestic
14 Water Supply Plan for EPA's approval. The Long Term Alternate
15 Domestic Water Supply Plan shall evaluate, at a minimum, the use
16 of Reverse Osmosis units for contaminated domestic wells exceed-
17 ing EPA's maximum Contaminant Levels (MCL's or State Action
18 Levels), the feasibility of completion of new wells into the deep
19 aquifer, and the feasibility of constructing a central supply
20 system which draws water from the deep aquifer. This evaluation
21 shall include, at a minimum, the elements listed below:

22 a. A search and comparison of existing technologies for
23 the treatment of nitrate contaminated water;

24 b. An effectiveness comparison of available existing
25 technologies for the treatment of nitrate contaminated water;

26 c. A technical comparison of existing types of Reverse
27 Osmosis Units;

1 d. The effects of chlorine on Reverse Osmosis Units;

2 e. The factors which affect the maintenance frequency
3 for Reverse Osmosis Units and the maintenance frequency with
4 respect to the total dissolved solids content of the water;

5 f. The need to supplement Reverse Osmosis Units with
6 Ultra Violet treatment units to eliminate bacteria;

7 g. An evaluation of a central supply water system that
8 would draw from the deep aquifer and distribute drinking water to
9 residents from a central location or locations;

10 h. The development of alternative systems using a com-
11 bination of deep wells, reverse osmosis, central supply system
12 and additional options that may be determined; and

13 i. Rationale for the recommended alternate domestic
14 water supply option (including cost comparisons of technologies),
15 and a schedule for implementation of the option selected by EPA.

16 3. Health and Safety Plan

17 EPA Review and Comment

18 Apache shall prepare and submit for EPA's review, a
19 Health and Safety Plan. The Health and Safety Plan shall be
20 prepared in accordance with the provisions of Title 29, Code of
21 Federal Regulations, Part 1910 and with the NIOSH/OSHA/USCG/USEPA
22 Occupational Safety and Health Guidance Manual for Hazardous
23 Waste Site Activities (October 1985), a copy of which has been
24 provided to Apache by EPA. It is Apache's responsibility to
25 comply with all applicable health and safety requirements at
26 federal, state and local levels.

27

28

1 **4. Quality Assurance Project Plan ("QAPP")**

2 Draft: EPA Review and Comment

3 Final: EPA Review and Approve

4 Apache shall prepare and submit for EPA's approval, a
5 QAPP. The QAPP shall be prepared in accordance with the "Interim
6 Guidelines and Specifications for Preparing Quality Assurance
7 Project Plans," EPA, December 1980 ("QAPP Guidance"), a copy of
8 which will be provided to Apache by EPA if Apache so requests.
9 The QAPP shall contain, at a minimum, the following sixteen
10 items, which are described in Chapter 5 of the QAPP Guidance:

- 11 a. Title Page with Provision for Approval Signatures;
12 b. Table of Contents;
13 c. Project Description;
14 d. Project Organization and Responsibility;
15 e. Quality Assurance Objectives for Measurement of Data
16 in terms of Precision, Accuracy, Completeness, Representative-
17 ness, and Comparability;
18 f. Sampling Procedures;
19 g. Sample Custody Procedures;
20 h. Calibration Procedures and Frequency;
21 i. Analytical Procedures;
22 j. Data Reduction, Validation, and Reporting;
23 k. Internal Quality Control Checks and Frequency;
24 l. Performance and System Audits and Frequency;
25 m. Preventative Maintenance Procedures and Schedules;
26 n. Statistical Assessments of Data Quality, including
27 Specific Routine Procedures Used to Assess Precision, Accuracy,
28

1 and Completeness;

2 o. Corrective Action; and

3 p. Quality Assurance Reports to Management.

4 5. Field Sampling Plans

5 Draft: EPA Review and Comment

6 Final: EPA Review and Approve

7 Apache shall prepare and submit for EPA's approval the
8 following five deliverables, the Field Sampling Plans. The Field
9 Sampling Plans shall be prepared in accordance with "Preparation
10 of a PRP Sample Plan for EPA Region 9," EPA, October 1987
11 ("Sample Plan Guidance"). As specified in the Sample Plan
12 Guidance, each Field Sample Plan shall contain, at a minimum, the
13 elements listed below:

14 a. Objective of sampling effort;

15 b. Background information which has a bearing on the
16 sampling effort;

17 c. Maps indicating sampling locations;

18 d. Rationale for sampling locations and numbers of
19 samples;

20 e. Request for analysis, in tabular and narrative
21 form;

22 f. Field methods and procedures, for the following
23 sampling tasks:

24 - Sample collection

25 - Disposal of contaminated materials

26 - Equipment decontamination

27 - Sample preservation

- Sample shipment
- Sample documentation
- Quality assurance; and

g. Identification of sample containers to be used for all sample media and analytical parameters.

The Field Sampling Plans to be submitted and the specific field tasks to be included in each Field Sampling Plan are described in paragraphs VI.B.5(a) through VI.B.5(e), below:

5(a). Waste Field Sampling Plan

Draft: EPA Review and Comment

Final: EPA Review and Approve

5(b). Pond Sediment Field Sampling Plan

Draft: EPA Review and Comment

Final: EPA Review and Approve

5(c). Surface Water (San Pedro River) Field Sampling Plan

Draft: EPA Review and Comment

Final: EPA Review and Approve

5(d). Ground Water Field Sampling Plan

Draft: EPA Review and Comment

Final: EPA Review and Approve

The Groundwater Field Sampling Plan shall include the following items, in addition to the elements listed in paragraph VI.B.5:

a. Stratigraphic borehole specifications, drilling log procedures, borehole geophysical log procedures, and procedures for abandonment of boreholes;

- 1 b. Surface geophysical survey procedures;
- 2 c. Monitoring well installation procedures, construction
- 3 specifications, drilling log procedures, well development
- 4 procedures, and proper disposal methods of well development water
- 5 and purge water;
- 6 d. Wellhead survey and water level survey procedures;
- 7 e. Long-term and short-term aquifer testing procedures;
- 8 f. Field methods and procedures for groundwater
- 9 quality sampling;

10 5(e). Soils Field Sampling Plan (Surface and Subsurface

11 Soils)

12 Draft: EPA Review and Comment

13 Final: EPA Review and Approve

14 The Surface Soils Sampling Plan and the Subsurface Soils

15 Sampling Plan shall include the following items, in addition to

16 the elements listed in paragraph VI.B.6:

- 17 a. Soil boring drilling and logging procedures;
- 18 b. Procedures for collection of subsurface soil samples
- 19 for chemical analysis;
- 20 c. Procedures for collection of surface soil samples
- 21 for chemical analysis; and
- 22 d. Ring infiltration testing procedures.

23 6. Study Area Survey Report

24 Draft: EPA Review and Comment

25 Final: EPA Review and Approve

26 Apache shall prepare and submit for EPA's approval, a

27 Study Area Survey Report. The Study Area Survey Report shall

28

1 contain, at a minimum, the following items:

2 a. Results of all information collected pursuant to
3 RI/FS Workplan Subtask 4.3.3, Private Well Survey; and

4 b. Results of all information collected pursuant to
5 RI/FS Workplan Subtask 4.3.4, Land Use Survey, including:

- 6 - Receptor Identification
7 - Wildlife and endangered species information
8 - Source and use of well water in the study area.

9 **7. Treatability Study Workplan**

10 Draft: EPA Review and Comment

11 Final: EPA Review and Approve

12 Apache shall prepare and submit for EPA's approval, a
13 Treatability Study Workplan. The Treatability Study Workplan
14 will be prepared in accordance with the most recent version of
15 the RI/FS Guidance. It will contain, at a minimum, the following
16 elements:

- 17 a. Objectives of the study;
18 b. Literature review;
19 c. Discussion of remedial technologies considered;
20 d. Rationale for selecting the technology to be tested;
21 e. Test procedures and sampling requirements;
22 f. Analytical methods;
23 g. Data management and evaluation procedures;
24 h. Health and safety precautions; and
25 i. Management of residuals.

26
27 **8. Technical Memorandum--Soils Investigation**
28

1 Draft: EPA Review and Comment

2 Final: EPA Review and Approve

3 Apache shall prepare and submit for EPA's approval, a
4 Technical Memorandum--Soils Investigation. The Technical
5 Memorandum--Soils Investigation shall contain, at a minimum, the
6 following items:

7 a. Summary of investigative activities;

8 b. Map(s) showing locations of all surface and subsur-
9 face sampling locations; and

10 c. Results of Subtask 4.3.8, and 4.3.9, including:

- 11 - Drilling logs which describe the material encoun-
12 tered for all soil borings
- 13 - Identification of all depths at which samples for
14 chemical analyses were collected
- 15 - Validated analytical results of the samples collec-
16 ted.

17 9. Phase I Hydrogeologic Investigation Report

18 Draft: EPA Review and Comment

19 Final: EPA Review and Approve

20 Apache shall prepare and submit for EPA's approval, the
21 Phase I Hydrogeologic Investigation Report. The Phase I
22 Hydrogeologic Investigation Report shall contain the following
23 information:

24 a. A description of any deviations from the
25 Groundwater Field Sampling Plan for testing procedures pursuant
26 to Subtask 4.3.5, including aquifer testing as opposed to slug
27 testing pursuant to Subtask 4.3.5;

1 b. A summary of all investigative activities pursuant
2 to Subtask 4.3.5;

3 c. Quality assurance and quality control documentation;
4 for all activities pursuant to Subtasks 4.3.5;

5 d. Results of Monitoring Well installations, including:

- 6 - Depths of monitoring well completion and screened
- 7 intervals
- 8 - Drilling logs which describe the materials encoun-
- 9 tered
- 10 - Results of any geophysical logging conducted in the
- 11 monitor well boreholes
- 12 - Monitor well water level information
- 13 - Monitor wellhead elevations
- 14 - Identification of all depths at which samples for
- 15 geologic logging were collected
- 16 - Description of the well development procedures.

17 e. Results of Subtask 4.3.3, Private Well Survey, in-
18 cluding:

- 19 - Elevations of the wellhead measuring points for all
- 20 wells surveyed
- 21 - Description of the monitoring point
- 22 - Measured water level elevations for all monitoring
- 23 wells and all private wells described in Subtask
- 24 4.3.3
- 25 - Water level contour map for the flood-plain alluv-
- 26 ium aquifer, based on the results of the water
- 27 level elevation measurements;

1 f. Results of Aquifer Testing of Subtask 4.3.5, includ-
2 ing:

- 3 - Calculations of storage and transmissivity values
- 4 for the valley-fill aquifer
- 5 - Calculations of transmissivity for the flood-plain
- 6 alluvium aquifer
- 7 - Discussion of assumptions made for the calcula-
- 8 tions;

9 g. Results of Subtask 4.3.11, the Initial Groundwater
10 Sampling, including:

- 11 - Map(s) of all sampling locations
- 12 - Validated analytical results
- 13 - Hazardous substance, pollutant and contaminant con-
- 14 centration contour map for the floodplain alluvium
- 15 aquifer
- 16 - Metals concentration contour map for the flood-plain
- 17 alluvium
- 18 - Results of all field measurements collected during
- 19 sampling;

20 h. Results of Subtask 4.3.5, Phase I Hydrogeologic In-
21 vestigation, including:

- 22 - Wells included in the groundwater monitoring network
- 23 - Parameters which will be analyzed for in each well in
- 24 the network; and

25 i. Analysis of information gathered during subtask
26 4.3.5, including:

- 27 - Narrative analysis of the geologic data collected
- 28

- Narrative analysis of the contaminant distribution identified during Subtask 4.3.11
- Geologic cross sections
- Geochemical facies plots
- Recommendations for locations of additional private wells to be sampled, additional monitoring wells, and additional stratigraphic boreholes.

10. Technical Memorandum--Treatability Study Testing

Draft: EPA Review and Comment

Final: EPA Review and Approve

Apache shall prepare and submit for EPA's approval, a Technical Memorandum--Treatability Study Testing. The Technical Memorandum--Treatability Study Testing shall include the following items:

- a. Discussion of the treatability study, including an explanation of 1) the actual testing procedures, 2) how the test was conducted, and 3) the results of the test;
- b. Discussion of any deviations from the Treatability Study Work Plan;
- c. All data generated during the treatability study testing;
- d. Recommendations for further surface and subsurface soil sampling; and
- e. Recommendations for further treatability testing.

11. RI Report

1 First Draft: EPA Review and Comment

2 Second Draft: EPA Review and Comment

3 Final: EPA Review and Approve

4 Apache shall prepare and submit for EPA's approval, an
5 RI Report. The RI Report shall follow the suggested RI Report
6 Format provided in the most recent version of the RI/FS
7 Guidance in effect on the date the First Draft is submitted to
8 EPA. All sections of the suggested RI Report Format which
9 apply to the Site shall be included in the RI Report. The
10 general categories of information to be presented in the RI
11 Report are provided in Task 8 of the RI/FS Work Plan. These
12 categories are consistent with the suggested RI Report Format.

13 12. Technical Memorandum--Development of Remedial Action
14 Alternatives

15 Draft: EPA Review and Comment

16 Final: EPA Review and Approve

17 Apache shall prepare and submit for EPA's approval, a
18 Technical Memorandum--Development of Remedial Action Alterna-
19 tives. The Technical Memorandum--Development of Remedial Action
20 Alternatives will include the following items, which are
21 described in the RI/FS Work Plan:

22 a. A brief summary of the contaminants of interest, con-
23 taminated media, and contamination pathways;

24 b. Identification of ARARs;

25 c. Development of remedial action objectives and general
26 response actions;

27 d. Identification of potential treatment technologies;
28

1 e. Identification of containment and disposal require-
2 ments associated with the treatment technologies;

3 f. Discussion of the technology screening process; and

4 g. Development of remedial alternatives.

5 **13. Technical Memorandum--Initial Screening of**
6 **Alternatives**

7 Draft: EPA Review and Comment

8 Final: EPA Review and Approve

9 Apache shall prepare and submit for EPA's approval, The
10 Technical Memorandum--Initial Screening of Alternatives which
11 will include a discussion of the following evaluations:

12 a. The effectiveness evaluation;

13 b. The implementability evaluation; and

14 c. The cost evaluation.

15 **14. Technical Memorandum--Detailed Development of**
16 **Alternatives**

17 Draft: EPA Review and Comment

18 Final: EPA Review and Approve

19 Apache shall prepare and submit for EPA's approval, the
20 Technical Memorandum--Detailed Development of Alternatives which
21 will include further development and definition of the remedial
22 alternatives first developed during Task 9 of the RI/FS Work
23 Plan. Sufficient detail will be provided in order to develop
24 cost estimates to an accuracy of -30 percent to +50 percent.

25
26
27 **15. FS Report**
28

1 First Draft: EPA Review and Comment

2 Second Draft: EPA Review and Comment

3 Third Draft: EPA Review and Approve

4 Apache shall prepare and submit for EPA approval the FS
5 Report which will include the items listed in Task 11 of the
6 RI/FS Work Plan.

7 **16. Monthly Reports**

8 EPA Review and Comment

9 Apache shall prepare and submit monthly reports. The
10 Monthly Reports will be submitted to EPA, ADEQ, and ADWR and will
11 include the following items:

12 a. A description of project activities during the
13 reporting period, including an explanation of any delays or al-
14 terations to the approved schedule, and percent completion for
15 each project task or phase of work;

16 b. A list of reports or other deliverables submitted to
17 EPA, ADEQ and ADWR during the reporting period;

18 c. A description of anticipated project activities, in-
19 cluding sampling and analytical work and reports and other
20 deliverables scheduled for the next reporting period;

21 d. Identification of any changes in key project person-
22 nel;

23 e. A chemical laboratory status report including a list
24 of samples submitted to chemical laboratories and those samples
25 for which analyses have been returned; and

26 f. A description of any problems or concerns which re-
27 quire resolution.
28

1 In addition, the following will be included in the
2 monthly reports on a quarterly basis only:

3 a. Results of quarterly ground water quality monitoring
4 for the past three months;

5 b. Results of quarterly surface water quality monitoring
6 for the past three months;

7 c. Results of monthly water level measurements for the
8 past three months;

9 d. Description of modifications to the ground water or
10 surface water monitoring networks during reporting period; and

11 e. Additional data collected during the previous quarter
12 and not released in a report or memorandum.

13 C. Apache shall submit all deliverables in accordance with
14 the schedule given below. For the purposes of this schedule, one
15 month shall be equivalent to 30 days. All documents submitted by
16 Apache, either in final or draft form, which are subsequent to
17 EPA's comments on a prior version of the document shall incor-
18 porate EPA's comments.

19 1. Source Control Plan

20 a. Draft due, in months
21 following effective date of
22 Order.....3 months

23 b. Final due, in days following
24 receipt of EPA's comments on
25 Draft.....15 days

26 2. Alternate Drinking Water Plan

27 a. Draft due, in months
28 following effective date
of Order.....3 months

b. Final due, in days following
receipt of EPA's comments on
Draft.....15 days

3. Health and Safety Plan

a. Draft due, in months

- 1 following effective date
of Order.....2 months
2 b. Final due, in days following
3 receipt of EPA's comments on
Draft.....15 days

4 4. QAPP

- 5 a. Draft due, in months
6 following effective date of
Order.....2 months
7 b. Final due, in days following
8 receipt of EPA's comments on
Draft.....15 days

8 5(a). Waste Field Sampling Plan

- 9 a. Draft due, in months
10 following effective date of
Order.....2 months
11 b. Final due, in days following
12 receipt of EPA's comments on
Draft.....15 days

12 5(b). Pond Sediment Field Sampling Plan

- 13 a. Draft due, in months
14 following effective date of
Order.....2 months
15 b. Final due, in days following
16 receipt of EPA's comments on
Draft.....15 days

16 5(c). Surface Water Field Sampling Plan

- 17 a. Draft due, in months
18 following effective date of
Order.....2 months
19 b. Final due, in days following
20 receipt of EPA's comments on
Draft.....15 days

20 5(d). Ground Water Field Sampling Plan

- 21 a. Draft due, in months
22 following effective date of
Order.....2 months
23 b. Final due, in days following
24 receipt of EPA's comments on
Draft.....15 days

24 5(e). Soils Field Sampling Plan (Surface and Subsurface
25 Soils)

- 26 a. Draft due, in months
27 following effective date of
28 Order.....2 months
b. Final due, in days following
receipt of EPA's comments on

Draft.....15 days

6. Study Area Survey Report

a. Draft due, in months following effective date of Order.....4 months

b. Apache shall address EPA's comments on the Study Area Survey Report by revising the appropriate sections of the First Draft RI Report.

7. Treatability Study Workplan

a. Draft due, in months following effective date of Order.....6 months

b. Final due, in days following receipt of EPA's comments on Draft.....15 days

8. Technical Memorandum--Soils Investigation

a. Draft due, in months following effective date of Order.....10 months

b. Apache shall address EPA's comments on the Technical Memorandum--Soils Investigation Testing by revising the appropriate sections of the First Draft RI Report.

9. Phase I Hydrogeologic Investigation Report

a. Draft due, in months following effective date of Order.....11 months

b. Final due, in days following receipt of EPA's comments on Draft.....15 days

10. Technical Memorandum--Treatability Testing

a. Draft due, in months following effective date of Order.....13 months

b. Apache shall address EPA's comments on the Technical Memorandum--Treatability Testing by revising the appropriate sections of the First Draft RI Report.

11. RI Report

a. First Draft due, in months

- 1 following effective date of
2 Order.....20 months
- 3 b. Second Draft due, in days following
4 receipt of EPA's comments on
5 First Draft.....30 days
- 6 c. Final due, in days following
7 receipt of EPA's
8 comments on Second Draft.....30 days
- 9 12. Technical Memorandum--Development of Remedial
10 Alternatives
- 11 a. Draft due, in months
12 following effective date
13 of Order.....13 months
- 14 b. Apache shall address EPA's
15 comments on the Technical
16 Memorandum--Development of
17 Alternatives by revising
18 the appropriate sections of
19 the First Draft FS Report.
- 20 13. Technical Memorandum--Initial Screening of
21 Alternatives
- 22 a. Draft due, in months
23 following effective date
24 of Order.....16 months
- 25 b. Apache shall address EPA's
26 comments on the Technical
27 Memorandum--Initial Screening
28 of Alternatives by revising
the appropriate sections of
the First Draft FS Report.
14. Technical Memorandum--Detailed Development of
Alternatives
- a. Draft due, in months
following effective date
of Order.....18 months
- b. Apache shall address EPA's
comments on the Technical
Memorandum--Detailed Development
of Alternatives by revising
the appropriate sections of
the First Draft FS Report.
15. FS Report
- a. First Draft due, in months
following effective date of
Order.....20 months
- b. Second Draft due, in days following
receipt of EPA's comments on
First Draft.....30 days
- c. Final due, in days following
receipt of EPA's

1 comments on Second Draft.....30 days

2 16. Monthly Reports

3 a. Monthly reports due, in days
4 within the end of the month
5 for which activities are
6 reported.....10 days

7 All work conducted pursuant to this Order shall be per-
8 formed in a manner consistent with all applicable requirements
9 of CERCLA and the NCP as amended, and shall be conducted in ac-
10 cordance with EPA RI/FS guidances ("Guidance on Remedial Inves-
11 tigation and Feasibility Studies Under CERCLA," October, 1988)
12 and any EPA updates or revisions to those guidances, and with
13 the standards and specifications contained in the approved RI/FS
14 Work Plan.

15 C. EPA shall, as indicated above, review, comment upon,
16 and approve or disapprove each report, document or other
17 deliverable. EPA shall notify Apache in writing of EPA's ap-
18 proval or disapproval. In the event of any disapproval, EPA
19 shall specify the reasons for such disapproval and either recom-
20 mend modifications or, for final deliverables, EPA may elect to
21 take over the work remaining.

22 D. In the event of unanticipated or changed circumstances
23 at the Site that have the potential to affect public health, wel-
24 fare or the environment, or Apache's work at the Site, Apache
25 shall notify EPA within 24 hours of the discovery of the unan-
26 ticipated or changed circumstances.

27 E. EPA may determine that additional tasks, including
28 remedial investigatory work, engineering evaluation, interim
29 response measures or tasks added in response to public comment

1 are necessary as part of the RI/FS. Apache shall implement any
2 additional tasks which EPA determines are necessary as part of
3 the RI/FS. The additional work shall be completed in accordance
4 with the standards, specifications, requirements, and schedule
5 determined or approved by EPA.

6 F. All Documents, including progress and technical reports,
7 approvals, disapprovals, and other correspondence to be submitted
8 pursuant to this Order, shall be sent to the following addressees
9 or to such other addressees as the parties hereafter may design-
10 nate in writing, and shall be deemed submitted on the date
11 received by EPA or Apache.

12 Documents to be submitted to EPA shall be sent as set forth
13 below:

14 Six copies shall be sent to:

15 Michael Wolfram
16 Remedial Project Manager (T-4-2)
17 Hazardous Waste Management Division
18 US EPA, Region 9
19 215 Fremont Street
20 San Francisco, CA 94105
21 Phone Number: (415) 974-7955
22 or, after November 10, 1989: (415) 744-1925

23 Two copies shall be sent to:

24 EPA's consultant, to be determined

25 Four copies shall be sent to:

26 Don Atkinson
27 Arizona Department of Environmental Quality
28 2005 North Central Avenue
Phoenix, Arizona 85004

One copy shall be sent to:

Timothy Allen
Arizona Department of Environmental Quality
4040 East 29th Street
Tucson, Arizona 85711

1 One copy shall be sent to:

2 Grant Gibson
3 Arizona Department of Water Resources
4 15 South 15th Avenue
5 Phoenix, Arizona 85007

6 VII. DESIGNATED PROJECT COORDINATORS

7 A. On or before the effective date of this Order, EPA shall
8 designate a Project Coordinator who shall have the
9 authorities, duties, and responsibilities vested in the
10 Remedial Project Manager by the National Contingency Plan.

11 Apache shall also designate a Project Coordinator who shall be
12 responsible for overseeing the implementation of this Order. The
13 EPA Project Coordinator will be EPA's designated representative
14 at the Site. To the maximum extent possible, all oral communica-
15 tions between Apache and EPA concerning the activities performed
16 pursuant to this Order shall be directed through the Project
17 Coordinators. All documents, including progress and technical
18 reports, approvals, and other correspondence concerning the ac-
19 tivities performed pursuant to the terms and conditions of this
20 Order, shall be delivered in accordance with Section VI above.

21 B. EPA and Apache may change their respective Project Coor-
22 dinators. Such a change shall be accomplished by notifying the
23 other party in writing at least one week prior to the change.

24 C. Consistent with the provisions of this Order, the EPA
25 Project Coordinator shall also have the authority vested in the
26 On-Scene Coordinator ("OSC") by the National Contingency
27 Plan, unless EPA designates a separate individual as OSC, who
28 shall then have such authority.

D. The absence of the EPA Project Coordinator or OSC from

1 the Site shall not be cause for the stoppage of work.

2 VIII. SITE ACCESS

3 A. To the extent that Apache requires access to land other
4 than land it owns, Apache shall obtain access agreements for
5 Apache, their contractors and agents, EPA, and its contractors
6 and agents, from the present owners or lessees as the need for
7 such access may arise. Such agreements shall provide access for
8 EPA, its contractors and oversight officials, ADEQ and ADWR,
9 their contractors, and Apache or its authorized representatives.
10 In the event that Apache is not able to obtain site access to
11 property owned or controlled by persons or entities other than
12 Apache, Apache shall notify EPA promptly regarding both the lack
13 of, and efforts to obtain, such access.

14 B. Apache shall permit EPA, and/or its authorized represen-
15 tatives to have access at all times to the Site to monitor any
16 activity conducted pursuant to the RI/FS Work Plan or to conduct
17 such tests or investigations as EPA deems necessary. Nothing in
18 this Order shall be deemed a limit upon EPA's authority under
19 federal law to gain access to the Site.

20 IX. SAMPLING AND DATA/DOCUMENT AVAILABILITY

21 A. Apache shall provide EPA with all information regarding
22 the presence of hazardous substances, pollutants and contaminants
23 at, or released from, the Site, including but not limited to:

24 1. The results and Quality Assurance/Quality Control
25 (QA/QC) documentation of all sampling and/or tests or other tech-
26 nical data generated by Apache or on Apache's behalf with regard
27 to soil, ground water, surface water, or air contamination by
28

1 hazardous substances, pollutants, or contaminants at the Site.

2 (Details and documentation of all quarterly sampling and analysis
3 data collected shall be presented in monthly reports);

4 2. Previous studies or reports;

5 3. Communications between Apache and local, state or other
6 federal authorities; and

7 4. Permits from local, state or federal authorities
8 regarding hazardous substance use or contamination at the Site.

9 B. At the request of EPA, Apache shall provide split or
10 duplicate samples to EPA and/or its authorized representatives of
11 any samples collected by Apache as part of the RI/FS Work Plan.
12 Apache shall notify EPA of any planned sample collection activity
13 in the preceding monthly report, but in no event shall the notice
14 be provided less than fourteen days prior to the planned sample
15 collection activity. Notice, other than in the monthly report,
16 shall be provided by Apache either in writing or by telephone to
17 the Project Coordinator or to his/her immediate supervisor.

18 C. Apache shall use quality assurance, quality control, and
19 chain or custody procedures described in the "EPA NEIC Policies
20 and Procedures Manual," May 1978, revised November 1984, EPA-
21 330/9-78-001-R and "Interim Guidelines and Specifications for
22 Preparing Quality Assurance Project Plans," December 1980, QAMS-
23 005/80, and any EPA updates or revisions to these guidances,
24 while conducting all sample collection and analysis activities
25 required by the Order. Apache shall consult with EPA in planning
26 for, and prior to, all sampling and analysis as detailed in the
27 RI/FS Work Plan. To provide quality assurance and maintain
28

1 quality control, Apache shall:

2 1. Use a laboratory which has a documented Quality As-
3 surance Program that complies with EPA guidance document QAMS-
4 005/80;

5 2. Ensure that EPA personnel and/or EPA authorized repre-
6 sentatives are allowed access to the laboratory and personnel
7 utilized by Apache for analysis;

8 3. Ensure that the laboratory used by Apache for analysis,
9 performs according to a method or methods deemed satisfactory to
10 EPA and submits all protocols to be used for analysis to EPA at
11 least 10 days before beginning analysis;

12 D. Apache shall permit EPA and/or its authorized represen-
13 tatives to inspect and copy all records, documents, and other
14 writings, including all sampling and monitoring data, that in any
15 way concern soil, ground water, surface water or air contamina-
16 tion at the Site. Nothing in this Order shall be interpreted as
17 limiting EPA's inspection authority under federal law.

18 E. Apache may assert a confidentiality claim, covering part
19 or all of the information requested by this Order pursuant to 40
20 C.F.R. § 2.203(b). Analytical data and data covered by Section
21 104(e)(7)(F) of CERCLA, 42 U.S.C. § 9604(e)(7)(F), shall not be
22 claimed as confidential by Apache and shall be provided to EPA by
23 Apache. Information determined to be confidential by EPA will be
24 afforded the protection specified in 40 C.F.R. Part 2, Subpart B.
25 If no such claim accompanies the information when it is submitted
26 to EPA, it may be made available to the public by EPA without
27 further notice to Apache.

1 F. If, at any time during the RI/FS process, Apache becomes
2 aware of the need for additional data beyond the scope of the
3 RI/FS Work Plan that is relevant to the RI/FS process, Apache
4 shall have an affirmative obligation to submit to the EPA Project
5 Coordinator within 20 days a memorandum describing the need for
6 additional data.

7 G. All data, factual information, and documents submitted
8 by Apache to EPA pursuant to this Order shall be subject to
9 public inspection.

10 X. RECORD PRESERVATION

11 Apache shall preserve, during the pendency of this Order and
12 for a minimum of three (3) years after termination of this Order,
13 a central depository of the records and documents required to be
14 prepared under the RI/FS Work Plan. Apache shall acquire and
15 retain copies of all documents that relate to hazardous waste
16 contamination at the Site and are in the possession of its
17 employees, agents, accountants, contractors, or attorneys. After
18 this three-year period, Apache shall notify EPA at least 30 days
19 before the documents are scheduled to be destroyed. If EPA re-
20 quests that some or all such documents should be saved, Apache
21 shall, provide EPA with the documents or copies of the documents.

22 XI. OTHER CLAIMS

23 This Order does not release Apache from any claim, cause of
24 action or demand in law or equity.

25 XII. OTHER APPLICABLE LAWS

26 Apache shall undertake all actions required by this Order in
27 accordance with the requirements of all applicable local, state,
28

1 and federal laws and regulations.

2 XIII. GOVERNMENT NOT LIABLE

3 The United States Government, and its employees and other
4 representatives shall not be liable for any injuries or damages
5 to persons or property resulting from the acts or omissions of
6 Apache, their employees or other representatives caused by carry-
7 ing out this Order. For the purposes of this Order, the United
8 States Government is not a party to any contract with Apache.

9
10 XIV. COMMUNITY RELATIONS/PUBLIC COMMENT

11 EPA will implement a Community Relations Program in accor-
12 dance with Agency policies, guidance documents and public comment
13 policy. Apache may participate in the community relations ac-
14 tivities when deemed appropriate by EPA. Upon receipt of each of
15 the following reports or workplan, the EPA shall make documents
16 available to the public for review and comment during a public
17 comment period pursuant to EPA's community relations policy: the
18 Remedial Investigation Report and the Feasibility Study Report.
19 As a result, EPA may modify, or require Apache to modify, the
20 Remedial Investigation Report and the Feasibility Study Report,
21 including a response-to-comments addendum.

22 XV. PARTIES BOUND

23 This Order shall apply to and be binding upon Apache, their
24 officers, directors, agents, employees, contractors, successors,
25 and assignees. No change in ownership or corporate or partner-
26 ship status will alter Apache's responsibility under this Order.
27 Apache shall provide a copy of this Order to all contractors,
28

1 sub-contractors, laboratories, and consultants retained to con-
2 duct any portion of the work performed pursuant to this Order
3 within 14 calendar days of the effective date of this Order or
4 date of such retention. Apache shall provide a copy of this Or-
5 der to any subsequent owner(s) or successor(s) before ownership
6 rights are transferred.

7 XVI. ENDANGERMENT DURING IMPLEMENTATION

8 The Director, Hazardous Waste Management Division, EPA
9 Region 9, may determine that acts or circumstances (whether re-
10 lated to or unrelated to this Order) may endanger human health,
11 welfare or the environment and may order Apache to stop further
12 implementation of this Order until the endangerment is abated.

13 XVII. NONCOMPLIANCE

14 A. A willful violation or failure or refusal to comply with
15 this Order may subject Apache to a civil penalty of up to \$25,000
16 per day in which the violation occurs or failure to comply con-
17 tinues, pursuant to provisions of Section 106(b)(1) of CERCLA, 42
18 U.S.C. § 9606(b)(1). Failure to comply with this Order may also
19 subject Apache to punitive damages of up to three times the total
20 costs incurred by the United States for site response pursuant to
21 Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3).

22 B. EPA may take over the RI/FS at any time if EPA deter-
23 mines that Apache is not taking appropriate action. EPA may or-
24 der additional actions it deems necessary to protect public
25 health, welfare, or the environment.

26 XVIII. OPPORTUNITY TO CONFER

27 Apache may request a conference with the Assistant Director,
28

1 Hazardous Waste Management Division, EPA Region 9, or his staff
2 to discuss the provisions of this Order. At any conference held
3 pursuant to Apache's request, Apache may appear in person or by
4 counsel for the purpose of presenting any objections, defenses or
5 contentions which Apache may have regarding this Order. If
6 Apache desires such a conference, Apache must make a request
7 orally to Geoffrey Kors, Assistant Regional Counsel, (415-974-
8 9073) or Michael Wolfram, Remedial Project Manager, (415-974-
9 7955) within 24 hours of receipt of this Order, and confirm the
10 request in writing within three (3) working days.

11 XIX. NOTICE OF INTENT TO COMPLY

12 Within four (4) calendar days of receipt of this Order,
13 Apache shall orally inform the Assistant Director, Hazardous
14 Waste Management Division (415-974-8910) and Geoffrey Kors, As-
15 sistant Regional Counsel, (415-974-9073) of its intent to comply
16 with the terms of this Order. The oral notice shall be confirmed
17 within two (2) days by written notice to the Assistant Director
18 and Geoffrey Kors, Assistant Regional Counsel. Failure to timely
19 notify EPA of Apache's intent to comply will be construed by EPA
20 as a refusal to comply.

21 XX. NOTICE TO THE STATE

22 EPA has notified the State of Arizona pursuant to the re-
23 quirements of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

24 XXI. SEVERABILITY

25 The provisions of this Order are severable. If any provi-
26 sion of this Order is declared by a Court to be invalid and/or
27 unenforceable, all other provisions of this Order shall remain in
28

1 full force and effect. Nothing in this Section should be con-
2 strued to imply that this Order is reviewable by any Court other
3 than as explicitly provided for in CERCLA, 42 U.S.C. § 9613 (h),
4 et. seq.

5 XXII. TERMINATION AND SATISFACTION

6 The provisions of the Order shall be deemed satisfied upon
7 receipt of written notice from EPA that Apache has demonstrated,
8 to the satisfaction of EPA, that all of the terms of this Order,
9 including any additional tasks which EPA has determined to be
10 necessary, have been completed.

11 XXIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

12 A. This Order is effective on the date signed by EPA.

13 B. No informal advice, guidance, suggestions, or comments by
14 EPA regarding reports, plans, specification, schedules, and any
15 other writing submitted by Apache will be construed as relieving
16 Apache of its obligation to obtain such formal approval as may be
17 required by this Order.

18
19 IT IS SO ORDERED:

20
21 UNITED STATES
22 ENVIRONMENTAL PROTECTION AGENCY

23 By:

24 Jeff Zelikson
25 Director,
Hazardous Waste Management Division
Region 9

Date:

10/5/89

26 Attachments
27
28

Attachment B
Apache Powder Company

Since 1980, soil, sludge, and water samples have been collected at and in the vicinity of the Site. Chemicals found in the soil, groundwater and surface water at or near the Site include the following:

Arsenic: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence of arsenic at 30 mg/l. Arsenic poisoning may result in irritation of the stomach and intestines, including nausea, vomiting, and diarrhea. Liver damage and skin abnormalities may also occur;

Cadmium: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence of cadmium at 20 mg/l. Ingestion of cadmium results in a gastrointestinal type of poisoning, as well as nausea, vomiting, diarrhea, and abdominal pain. Inhalation of dust containing cadmium may cause dryness of the throat, cough, headache, and vomiting;

Chromium: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence of chromium at 8 mg/l. During August through November 1987, EPA conducted a Preliminary Investigation (PI) at and in the vicinity of the Site, and chromium was detected during the PI at concentrations up to 400 mg/kg in soils and up to 810 mg/kg in pond sludge. Exposure to chromium compounds may result in irritation to the skin and respiratory passages and may lead to ulceration. Ingestion may lead to severe irritation of the gastrointestinal tract, circulatory shock, and renal damage;

Lead: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence of lead at 60 mg/l. During August through November 1987, EPA conducted a Preliminary Investigation (PI) at and in the vicinity of the Site. On-site, lead was detected during the PI at concentrations of up to 1340 mg/kg in soils, 150 mg/kg in pond sludge, and 53 mg/l in pond water. Inhalation and ingestion of lead may cause anemia; lead poisoning may also result in diarrhea, nausea, vomiting, weakness, headache, and dizziness, and may result in permanent brain damage;

Nitrates: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence of nitrates at concentrations of 50 mg/l. In July 1982, representatives from the Southeastern Arizona Governments Organization (SEAGO) and the Arizona Department of Health Services (ADHS) collected soil and water samples at the Site. In Pond 7 water, 13,490 mg/l nitrate-nitrogen was detected, in Pond 1A soils, 9,780 mg/kg nitrate-nitrogen was detected, and in the burn area, 19,560 mg/kg nitrate-nitrogen was detected. In March, June, July, and December 1984, SEAGO sampled off-site supply wells. A sample collected from a domestic well owned by the Carnes family ("Carnes well") exhibited a nitrate-nitrogen level of 470 mg/l. Other off-site wells exhibited nitrate-nitrogen levels of up to 39 mg/l. In 1985, Apache

sampled the water in several on-site ponds, and analyses indicated 4,450 mg/l nitrate-nitrogen in the Dynagel pond, 5,650 mg/l nitrate nitrogen in Pond 7, and 8,990 mg/l nitrate-nitrogen in Pond 6B. Since July 1986, the Arizona Department of Environmental Quality (ADEQ), formerly named ADHS, has collected surface water samples from the San Pedro River upstream, downstream, and adjacent to the Site. Samples collected from December 1986 through May 1987 from a sampling location located downstream from the Site, indicated the following nitrate-nitrogen concentrations: December 1986--720 mg/l, January 1987--591 mg/l, February 1987--556 mg/l, March 1987--516 mg/l, April 1987--736 mg/l, May 1987--589 mg/l. Samples collected during those times from a sampling point located adjacent to the Site indicated an average nitrate-nitrogen concentration of 2.81 mg/l. In December 1986, ADHS collected groundwater samples from off-site wells near the Site. In a domestic well owned by the Carnes family, a nitrate-nitrogen concentration of 335 mg/l was detected. During August through November 1987, EPA conducted a Preliminary Investigation (PI) at and in the vicinity of the Site. On-site, nitrate-nitrogen was detected at concentrations of up to 3420 mg/kg in soils, up to 3465 mg/kg in pond sludge, and up to 471 mg/l in pond water. In off-site groundwater, nitrate nitrogen was detected at levels up to 360 mg/l. A groundwater sample collected upgradient of the Site exhibited 0.82 mg/l of nitrate-nitrogen. In off-site surface water samples collected from San Pedro River locations downstream from Apache, nitrate-nitrogen was detected at levels up to 1099 mg/l nitrate-nitrogen. Surface water samples collected in the San Pedro River upstream of Apache exhibited nitrate-nitrogen concentrations of 0.08 mg/l and 0.14 mg/l. The toxicity of nitrate in humans is due to the reduction of nitrate to nitrite by bacteria. Methemoglobinemia occurs when nitrite reacts with hemoglobin to form methoglobin, which will not transport oxygen to the tissues, and can thus lead to asphyxia. Infants, small children, and pregnant women are most susceptible to methemoglobinemia. In June, 1987, the Agency for Toxic Substances and Disease Registry determined that potable water from private wells in the area was contaminated with nitrates and that it represented an imminent and substantial health concern, especially to infants.

Zinc: In July 1980, EPA collected liquid samples from Pond 2A, which indicated the presence zinc at 1.9 mg/l. During August through November 1987, EPA conducted a Preliminary Investigation (PI) at and in the vicinity of the Site. On-site, zinc was detected at concentrations of up to 16,000 mg/kg in soils, 41,600 mg/kg in pond sludge, and 610 mg/l in pond water. Inhalation of zinc fumes may result in weakness, chills, fever, nausea, and vomiting.

Attachment C
DETERMINATION OF IMMINENT AND SUBSTANTIAL ENDANGERMENT

SITE: Apache Powder, St. David, Arizona.

DOCUMENTS REVIEWED:

My determination is based on Environmental Protection Agency (EPA) records including those regarding the events, data and reports described below:

- o EPA's July 1980 sampling data;
- o Southeastern Arizona Governments Organization and the Arizona Department of Health Services Sampling data of July 1982;
- o Apache Powder Company, 1985 sampling data;
- o Environmental Department of Environmental Quality, 1986 sampling data;
- o Environmental Protection Agency Preliminary Investigation Report, June 1988.
- o Agency for Toxic Substances and Disease Registry (ATSDR), U.S. Public Health Service, September 1, 1988, Preliminary Health Assessment for Apache Powder, St. David Arizona.


DETERMINATION:

Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, (CERCLA), provides that when the President of the United States finds that there may be an imminent and substantial endangerment to the public health, welfare, or the environment because of an actual or threatened release of a hazardous substance from a facility to the environment, he may issue such Orders as may be necessary to protect public health, welfare or the environment.

The findings of the EPA records and documents described above, conclusively demonstrate that hazardous substances, pollutants, and contaminants have been released into the environment on-site, and that the potential release or threat of release of hazardous substances to the environment exists.

Pursuant to the CERCLA Section 106 authority delegated to me by the President, through the EPA Regional Administrator, I determine that the records and documents reviewed, especially the Preliminary Investigation Report, and the ATSDR Preliminary Health Assessment, demonstrate that an imminent and substantial endangerment to human health, welfare, or the environment may exist because of the actual and threatened release of hazardous substances at the Apache Powder Site.

Dated at San Francisco, California, this 5th day of October, 1989.



Jeff Zelikson, Director, Hazardous Waste
Management Division, U.S. Environmental
Protection Agency, Region 9